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Kelly L. Payne, P.G.
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M103510011
cc: Leslie
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April
Task: 5709

31 Oct 2013

VIA EMAIL AND US MAIL

Mr. Paul Baker
Utah Division of Oil, Gas & Mining
P.O. Box 145801
Salt Lake City, Utah 84114 - 5801

Subject: Updated Notice of Intention to Commence Large Mining Operations
Copperton Concentrator
M/035/0011

Dear Mr. Baker:

Please find attached an update to the Kennecott Utah Copper Notice of Intention to Commence Large Mining Operations (NOI) for the Copperton Concentrator. This update summarizes operations and reclamation activity at the Copperton Concentrator and provides a framework for additional updates and supplemental information to be added as the Copperton Concentrator adapts operations in the future.

Please contact Thiess Lindsay (801-569-6066) should you have any questions concerning this submittal.

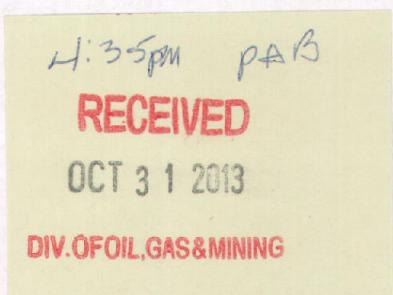
Thank you and your staff for your continued cooperation.

Regards,

Kelly L. Payne, P.G.
Manager - Environment

Enclosure

cc: Leslie Heppler (UDNR-UDOJM)



M1035/0011
cc: Leslie
Lynn
Wayne
April
Task: 5709

Notice of Intention to Commence Large Mining Operations

COPPERTON CONCENTRATOR

DIVISION OF OIL, GAS, AND MINING PERMIT NUMBER M/035/0011

Submitted to:

Utah Department of Natural Resources

Division of Oil, Gas and Mining

1594 West North Temple, Suite 1210

PO Box 145801

Salt Lake City, Utah 84114-5801

Submitted by:

Kennecott Utah Copper LLC

4700 Daybreak Parkway

South Jordan, UT 84095

OCTOBER 2013

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Acronyms and Abbreviations

Cu – Copper

Ag – Silver

amsl – above mean sea level

Au – Gold

DOGM – Utah Division of Oil, Gas and Mining

DWQ – Utah Division of Water Quality

DWR – Division of Wildlife Resources

EMS – Environmental Management System

GWDP – Groundwater Discharge Permit

ISO – International Standardization Organization

KUC – Kennecott Utah Copper, LLC

KUCC – Kennecott Utah Copper Corporation

LMO – Large Mine Operations

M&RP – Mine and Reclamation Plan

MAP – Molybdenum autoclave process

Mo – Molybdenum

Moly. – Molybdenum

MSHA – Mine Safety and Health Administration

NOI – Notice of Intent

NRCS – National Resources Conservation Service

PLS – Pure Live Seed

SAG – Semi autogenous grinding

SPCC – Spill Prevention Control and Countermeasure

SWPPP – Storm Water Pollution Prevention Plan

UPDES – Utah Pollution Discharge Elimination System

USFWS – United States Fish and Wildlife Service

USGS – United States Geological Survey

VMP – Vegetation Monitoring Program

Kennecott Utah Copper LLC

Notice of Intention

Large Mining Operations

Introduction

Kennecott Utah Copper LLC (KUC) operates the Copperton Concentrator, a copper ore grinding and flotation facility in southwestern Salt Lake County near the town of Copperton. The town of Copperton was established in 1926 near the mouth of Bingham Canyon as a residential area for employees of the Utah Copper Company. The town is located approximately 17 miles southwest of Salt Lake City and is currently the only remaining mining town associated with the Bingham Canyon Mine. The Copperton Concentrator receives ore by overland conveyor from the Bingham Canyon Mine.

DOGM Permitting History

The Copperton Concentrator was initially permitted as a new grinding plant through an amendment to the Bingham Canyon Mine Division of Oil, Gas, and Mining (DOGM) permit, M/035/0002.

In late 1984, Kennecott Copper Corporation applied to the Utah Bureau of Water Pollution Control for a permit to construct water control facilities associated with a proposed ore processing plant to be located approximately one mile north of Copperton, Utah. These water control facilities included a 7.5 million gallon process water reservoir, a slurry (flotation feed) pipeline, a return process water pipeline, and stormwater retention reservoirs.

In 1985, a permit application was submitted to DOGM regarding plans to modernize facilities by installing an in-pit crushing system, installing a conveying system to convey crushed ore to a proposed new grinding plant located approximately one mile north of Copperton, construction of the proposed grinding plant, a pipeline to transport the ground ore to the existing Arthur and Magna flotation facilities, and a second pipeline to return the process water to the grinding plant. The proposed grinding plant included three lines of grinding equipment. Each line included a semi-autogenous mill, two ball mills, cyclones, screens, sumps, pumps and other related material handling equipment.

Kennecott Copper Corporation submitted an application to DOGM in 1986 to amend the mining and reclamation plan to relocate flotation and molybdenum recovery facilities to be adjacent to the Copperton grinding facilities. Also included in this application are the Copperton Concentrator
DOGM Permit Number M/035/0011
October 2013

proposed construction of a third pipeline in the existing slurry pipeline corridor to convey concentrate from the Copperton Plant to the Smelter and the proposed retrofitting of one of the existing slurry pipelines to become a tailings transport pipeline.

In early 1990, Kennecott Utah Copper Corporation (KUCC) submitted a notice of intention to DOGM regarding a proposed expansion to add a fourth line of grinding equipment to the grinding facilities at the Copperton Concentrator. After subsequent modifications to the proposal by Kennecott Utah Copper Corporation, tentative approval was granted in early 1992, at which time DOGM suggested that a separate file number be issued for the Copperton Concentrator Mill and Fourth Line Expansion to simplify future permitting discussions. At this time the Copperton Concentrator began operations under DOGM file number M/035/0011.

In accordance with the proposed fourth mill line expansion, three 400-foot diameter tailings thickeners were added to the Copperton Concentrator. The thickeners increase the density of the solids in the tailings slurry before it is piped through the tailings pipeline.

In order to maintain operations during upset conditions, and to allow the tailings pipeline to be taken out of service for maintenance, a second tailings pipeline was constructed. KUCC completed the construction of a second tailings pipeline in December 1996. The second pipeline was built in a corridor that was already occupied by four pipelines, which include the first tailings pipeline, the return water line, and two copper concentrate lines. The pipeline extends approximately 66,000 feet through Section 5, T3S, R2W; Sections 6, 7, 8, 16, 17, 28, 29, and 32, T2S, R2W; and Section 31, T1S R2W.

In 2005, in an effort to increase throughput of copper ore in the Copperton Concentrator and improve process efficiency, KUCC added two pebble crushing units and related material handling equipment. These units receive critical-sized material from the SAG mills, which is crushed and sent back through the SAG mill ultimately increasing throughput (KUCC, 2005).

In 2007, KUCC upgraded the bulk flotation circuit to maintain performance and accommodate anticipated mine expansion and production.

In 2011, Kennecott Utah Copper, LLC (KUC) initiated facility upgrades and additions which included:

- Construction of a molybdenum concentrate storage tank and associated pumps at the Copperton Concentrator
- Construction of flotation cell expansion and row replacement
- Construction of an ore sorting pilot plant (completed in 2012)

R647-4 Large Mining Operations

R647-4-104 Operator(s), Surface and Mineral Owner(s)

104.1 Operator Responsible for Mining Operations and Reclamation of the Site

1. Mine Name:

Copperton Concentrator

2. Operator:

Kennecott Utah Copper LLC

4700 Daybreak Parkway

South Jordan, UT 84095

Phone: 801-204-2000

3. Contact Person for Permitting, Surety, Notices:

Manager, Environmental

Kennecott Utah Copper

4700 Daybreak Parkway

South Jordan, UT 84095

Phone: 801-204-2000

4. Location of Operation:

Salt Lake County, Utah

Section 5, Township 3 South, Range 2 West Salt Lake Base and Meridian

UTM Coordinates: NAD83, Zone 12, Easting 1335764.6, Northing 14740626.1

Physical Address of facility: 8400 West 10200 South, Copperton, UT 84006

104.2 Surface and Mineral Owners

All surfaces related to the Copperton Concentrator and second tailings pipeline are owned by KUC.

104.3 Federal Mining Claims or Lease Numbers

There are no Federal mining claims or permits.

R647-4-105 Maps, Drawings and Photographs

The maps included in this document are those required under R647-4-105. The following information is provided:

105.1 Base Location Map and Land Ownership Map

General plant location, permit and property boundary information is provided in Figure 1

105.2 Final Design and Surface Facilities Detail

Surface structures and facilities relative to the Copperton Concentrator are depicted in Figure 2. On Figure 3 the Tailings Pipeline corridor from the Copperton Concentrator to the North Tailings Impoundment is depicted. The ore and water conveyance routes from the Bingham Canyon Mine to the Copperton Concentrator are provided in Figure 4.

105.3 Additional Maps

A soils map for the Copperton Concentrator and the locations of growth media and general fill stockpiles associated with the facility are provided on Figures 5 and 6, respectively. Culinary wells and monitor wells relative to the Copperton Concentrator are depicted on Figure 7 and a geologic map for the facility is shown on Figure 8. Additional maps provided for this document identify post-mining activities for the Copperton Concentrator. Figure 9 illustrates the post-mining reclamation treatments to be implemented, as well as which structures are to remain during post mining activities and which are to be removed. Figure 10 depicts the post-reclamation water treatment facility, which will utilize one of the thickeners, the tailings pipeline, one parking lot, and related structures.

R647-4-106 Operation Plan

106.1 Mineral to be Mined

No mining occurs at the Copperton Concentrator.

106.2 Operations to be Conducted

106.2.1 Processing Facilities

Ore from the Bingham Canyon Mine is transported to the Copperton Concentrator via belt conveyor to a coarse ore storage pile. The coarse ore is passed through a semi autogenous grinding (SAG) mill to two parallel ball mills. Oversized SAG mill pebbles are removed from the SAG mill trammels prior to entering the ball mills and conveyed to a pebble surge bin upstream of two pebble crushers located south of the grinding plant building (Figure 2). Pebbles are then fed to the two pebble crushers from the surge bin using variable speed feeders. The crushed pebbles are then returned to the SAG mill feed. After the ball mills, reagent is added to the finely ground ore and enters a first stage flotation circuit. The product from this stage is a copper/moly concentrate.

The combined copper/moly concentrate is processed in the moly plant which separates the copper concentrate from the moly concentrate. After separation, the molybdenum is sent offsite for further processing.

Copper concentrate leaves the moly plant and goes through a final flotation circuit. Concentrate from the copper flotation circuit is delivered to the copper-moly thickeners. The copper-moly thickeners provide slurry to the surge tanks upstream of the moly plant. The moly is separated from the copper in the moly plant, producing a copper concentrate that is fed to the copper thickener. The copper thickener is used to partially dewater the slurry, increasing the slurry density of the copper concentrate before it is pumped to the filter plant near the smelter. The water produced by the copper-moly thickeners is further treated in a clarifier to remove any solids that may have flowed to the thickener overflow, and is returned to the process water circuit for reuse. The copper concentrate is then transported to the Smelter area through the two existing concentrate pipelines.

In 2011, KUC construction began of an experimental and temporary ore sorting pilot plant at the Copperton Concentrator facility. At the Ore Sorter Pilot Plant, proprietary ore processing technology is tested and developed. As part of this testing, ore that has been crushed at the mine is delivered to the pilot plant site and stockpiled in a designated location. The ore is then loaded into a feed where it is passed through a proprietary process. After passing through this process the ore is deposited in an

overflow stockpile located outside of the building. The material is then moved as necessary to the Copperton A-frame.

106.2.2 Tailings Management

Tailings from the milling process are sent to three thickeners located east of the concentrate facilities (Figure 2). The thickeners increase the density of the solids in the tailings slurry before it is piped through the tailings pipeline. Thickened tails are transported to the North Tailings Impoundment via one of two pipelines. The primary pipeline is a 60" diameter line and the secondary pipeline is a 48" diameter line. The primary tailings pipeline is a 60-inch diameter reinforced concrete pipe that complies with American Water Works Association standards for a Wall C, Class III design (approximately 6 inches thick). To improve abrasion resistance, the thickness of the bottom of the pipeline was increased by an additional 6 inches. Vents are located approximately every 1,000 feet along the pipeline. Where the pipeline crosses a trestle, enters or exits a drop box, the pipeline is constructed of 60-inch diameter rubber-lined steel pipe. The drop boxes are constructed with 3-feet thick concrete walls. To minimize wear, water entering the drop boxes hits an impact pool rather than the concrete sides.

The pipeline runs above ground for approximately 56,000 feet and below ground for 10,000 feet across the Aliant Tech property. Elevation at the head of the tailings pipeline (located at Copperton Concentrator) is 5443 feet above mean sea level (amsl), while elevation at the North Tailings Impoundment is 4724 feet amsl. The pipeline maintains a grade of 0.7 to 0.8 percent throughout its length, with half of the elevation loss due to general pipeline grade, and the other half due to the 14 drop boxes, which contribute an elevation drop of between 6 and 21 feet.

Tailings produced from the concentrator are discharged as slurry into a 3,000-acre area called the North Tailings Impoundment, located approximately 12 miles north of the Copperton Concentrator and permitted separately under DOGM Permit M/035/0015.

106.3 Estimated Acreage to be Disturbed and Reclaimed

106.3.1 Processing Facilities

As of 2013, 368 acres of land have been impacted by ore processing at the Copperton Concentrator. See Section 110 for post-mining acreage and use of the Copperton Concentrator.

106.3.2 Tailings Management

The pipeline corridor is approximately 50 feet wide including both pipelines and a maintenance road. Areas impacted by construction activities have been reclaimed (i.e. cut slopes) except for the pipeline itself and the access road. Pursuant to an approved variance request (see Section R647-4-112), the tailings pipeline corridor will not be reclaimed at facility closure but will remain in place for use as part of the Bingham Canyon Mine post-closure water management system.

106.4 Nature and Amount of Materials to be Processed

Approximately 40-60 million tons of ore are mined per year from the Bingham Canyon Mine. This ore is crushed and conveyed to the Copperton Concentrator for processing. On average, approximately 100,000 to 150,000 tons of ore are processed per day at the Copperton Concentrator, generating on average approximately 98,000 to 148,000 tons of tailings per day.

From that processing, approximately one million tons of 22-28 percent copper concentrate are extracted and sent to the smelter per year. Approximately 20,000 to 30,000 tons of molybdenum concentrate are also extracted from the ore per year.

106.5 Existing Soil Types/Location and Extent of Topsoil

Figure 5 shows the soil types and locations for the Copperton Concentrator. Soil types were mapped by the Natural Resources Conservation Service (NRCS) (NRCS, 2008). The soils identified in and around the facility are depicted in Table 1 Soils Information for the Copperton Concentrator and Surrounding Areas (NRCS, 2013).

Table 1: Soils information for the Copperton Concentrator and Surrounding Areas

Soil Map Unit	Description	Ecological site	Soil Depth	Parent Material	Drainage Class	Frequency of Flooding/Ponding
BVF	Butterfield association, moderately steep – Butterfield, shallow	Upland Stony Loam (Mountain Big Sagebrush)	0 to 20 inches: Very cobbly to extremely cobbly sandy clay loam; 20 to 30 inches: Unweathered bedrock	Residuum weathered from igneous rock	Well Drained	None / None
BVF	Butterfield association, moderately steep – Butterfield	Upland Stony Loam (Mountain Big Sagebrush)	0 to 10 inches: Extremely stony to cobbly loam; 10 to 30 inches: Extremely cobbly clay loam	Residuum weathered from igneous rock	Well Drained	None / None
DPE	Dry Creek association, moderately steep	Upland Loam (Mountain Big Sagebrush)	0 to 11 inches: Gravelly loam; 11 to 60 inches: Gravelly to very gravelly silty clay loam	Alluvium derived from limestone, sandstone, and shale	Well Drained	None / None
DPE	Copperton association, moderately steep	Upland Gravelly Loam (Bonneville Big Sagebrush)	0 to 42 inches: Very gravelly to very cobbly loam; 42 to 60 inches: Extremely cobbly fine sandy loam	Alluvium derived from limestone, sandstone, and shale	Well Drained	None / None
DRD	Dry Creek soils, 3 to 15 percent slopes	Upland Loam (Mountain Big Sagebrush)	0 to 60 inches: Silt to gravelly silty clay loam	Alluvium derived from limestone, sandstone, and shale	Well Drained	None / None
HDF	Harkers-Dry Creek association, moderately steep	Mountain Loam (Oak)	0 to 80 inches: loam to very gravelly clay loam	Colluvium and/or residuum derived from limestone, sandstone, and shale	Well Drained	None / None

During the original 1988 Copperton Modernization Project, KUC did not store any upper-horizon soil for final reclamation use. For all disturbances since the 1991 fourth line expansion, KUC has stockpiled growth media for use during final reclamation. This growth media salvage consists of removing the upper horizons of the soil from disturbed sites after clearing and grubbing is completed. The removed material is then relocated to various growth media stockpiles throughout the facility as shown on Figure 6. A total of 832,400 yd³ of growth media and general fill material has been stockpiled for use during final reclamation.

106.6 Plan for Protecting and Re-depositing Existing Soils

Where applicable, precipitation runoff is directed around the growth media stockpiles and silt control fencing is utilized to prevent the escape of fine particulate matter from the stockpiles prior to the establishment of interim vegetation. KUC will place the growth media from these stockpiles onto the areas to be reclaimed following final closure of the facilities. A minimum average thickness of 6 inches of growth media will be distributed at final reclamation. This depth may range from 6-12 inches on average depending upon terrain. Some of the steeper embankments may receive less than 6 inches of growth media, depending upon stability of the placed material.

106.7 Existing Vegetative Communities

The Copperton Concentrator is located within the Central Basin and Range Ecoregion. Elevation of this area ranges between 5,450 and 5,800 feet amsl. Based on Provisional Southwest Regional GAP data (USGS 2004), the Copperton Concentrator is located in an area with the following landcover categories:

Table 2: Vegetative Communities Surrounding the Copperton Concentrator

SCODE	Ecological Category	Occurrence
S040	Great Basin Pinyon-Juniper Woodland	Warm, dry sites on mountain slopes, mesas, plateaus, and ridges
S046	Rocky Mountain Gambel Oak-Mixed Montane Shrubland	Dry foothills, lower mountain slopes, and at the edge of the western Great Plains
S054	Inter-Mountain Basins Big Sagebrush Shrubland	Broad basins between mountain ranges, plains and foothills
S055	Inter-Mountain Basins Semi-Desert Shrub-Steppe	Alluvial fans and flats with moderate to deep soils
S090	Inter-Mountain Basins Semi-Desert Grassland	Dry plains and mesas
S118	Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland	Mountain ranges of the Great Basin

Much of the lands over which the tailings pipeline runs has been affected by mining activities since 1906. Prior to this the land supported grasses, forbs, sagebrush, oak, serviceberry, mountain mahogany, and juniper. Species such as Russian olive, Chinese elm, alfalfa, and clover have been planted or allowed to grow in over the years in the pipeline area. The pH of soils in this area ranges from 4.5 to 7.5. Surface elevations range from approximately 4,200 feet to 5,400 feet amsl. (Kennecott Copper Corporation, 1976)

106.8 Depth to Groundwater, Overburden Material, and Geologic Setting

Depth to Groundwater.

Three wells drilled in 1987 by KUC in the vicinity of the Copperton Concentrator are used for culinary water and are screened in the bedrock aquifer (Figure 7). According to the driller's logs, static water was encountered at a depth of 125 feet. These wells are located south and upstream of the facility. A number of monitoring wells also exist and are located east and southeast, down gradient of the facility as shown in Figure 7. The depth to water in several of these wells is measured multiple times on an annual basis and averages 150 feet to groundwater bgs.

More detail regarding groundwater and the aquifer is located in section 109.1.1

Overburden Material and Geologic Setting.

The Copperton Concentrator facilities are located on the unconsolidated alluvium of the valley fill adjacent to the Oquirrh Mountains (Figure 8; UGS, 2013). There are no perennial streams near the concentrator and surface water runoff only exists during high intensity storms or snow melt.

The lithologic data provided in the driller's logs of the three wells drilled in 1987 indicates that the upper layer of the project area is Quaternary fill. According to driller's logs, Tertiary volcanics occur at a depth of 85-515 feet, which are then followed by alternating layers of sandstone and shale.

There are two aquifers in the vicinity of the Copperton Concentrator, the bedrock and principal alluvial. The bedrock aquifer is composed of Paleozoic sandstones and quartzite and Tertiary volcanic rocks. Flow within the bedrock aquifer is assumed to be primarily by fracture flow and provides some recharge to the base of the overlying principal aquifer as the bedrock dips downward, basin-ward. The hydraulic conductivity of bedrock is relatively low, typically less than 1 foot per day.

The principal aquifer is unconfined and composed of interbedded volcanic and quartzitic gravels, clays and cemented gravels. The principal aquifer extends eastward from the foot of the Oquirrh Mountains and is bounded at the base by the Jordan Narrows formation. Aquifer thickness increases to the east, thins to the north and remains fairly constant to the south. Near the concentrator the principal aquifer is approximately 150 feet thick. Two production wells, approximately one-half mile from the concentrator, are used as a source of drinking water for the town of Copperton. The wells are screened in volcanic gravels of the principal aquifer. The area around the Copperton Concentrator provides recharge to the principal aquifer of the Jordan Valley; groundwater flow is primarily to the east.

106.9 Ore and Waste Handling Practices and Facilities

As seen on Figure 2, the Copperton Concentrator is comprised of numerous buildings and structures, as well as tailings pipelines, which can be seen on Figure 3. A detailed list of all structures related to the Copperton Concentrator and second tailings pipeline can be found in Appendix B. All ore received from the Bingham Canyon Mine is stored in the covered ore stockpile ("A Frame"), located west of the grind plant. Tails from the concentrate process are transported via slurry pipe to the North Tailings Impoundment. No mineral waste is stored onsite. Copper concentrate is sent via pipeline to the smelter, while the molybdenum concentrate is managed on site before being sent offsite for further processing.

106.10 Amount of Material to be Extracted, Moved

No material is extracted or moved from the Copperton Concentrator.

R647-4-107 Operation Practices

As required, the relevant Operation Practices stipulated in R647-4-107 will be followed.

R647-4-108 Hole Plugging Requirements

Drilling is not a practice utilized during operation of the Copperton Concentrator.

R647-4-109 Impact Assessment

109.1 Surface and Ground Water Systems

109.1.1 Groundwater

The Copperton Concentrator is located on the unconsolidated alluvium of the valley fill adjacent to the Oquirrh Mountains.

KUC has a Groundwater Discharge Permit (GWDP) with the Division of Water Quality (DWQ) for the Copperton Concentrator (UGW350017) which was renewed for KUC in February 2009 and is renewed on five-year intervals.

Groundwater monitoring for permit compliance occurs quarterly. All facilities are designed and constructed to prevent impacts to groundwater and will comply with all regulations stipulated by DWQ.

109.1.2 Surface Water

There are no perennial streams near the concentrator and surface water runoff only exists during high-intensity storms or snow melt. There are no jurisdictional wetlands or waters of the US as defined by the EPA and the US Army Corps of Engineers within the concentrator facility (WPNRC, 2011). KUC maintains a Storm Water Pollution Prevention Plan (SWPPP) which was prepared in support of UPDES Permit Number UT0000051, Condition I.E.

109.2 Federally Threatened or Endangered Species And Habitats

At present there are five Endangered Species Act protected species listed for Salt Lake County.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	Threatened
Least Chub	<i>Iotichthys phlegethonitis</i>	Species of Concern
Greater Sage-grouse	<i>Centrocercus urophasianus</i>	Species of Concern
June Sucker	<i>Chasmistes liorus</i>	Endangered
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Species of Concern

While there is abundant sagebrush near the Concentrator, there is no evidence the Greater Sage-grouse occurs on KUC property or in nearby properties, nor is Salt Lake County a part of any Sage-grouse Management Areas (Utah [DWR](#), 2009). All other listed species either occur in permanent water bodies, along riparian corridors or wet meadows, none of these habitats are found on or near the Concentrator area.

The environs near and around the Concentrator do not support habitat where listed species occur thus no impact from operations is expected.

109.3 Existing Soil and Plant Resources

As stated in Section 106.5 Existing Soil Types/Location and Extent of Topsoil and Section 106.6 Plan for Protecting and Re-depositing Existing Soils, areas permitted for disturbance for the Copperton Concentrator contain little or no original vegetation, having been disturbed for construction purposes.

109.4 Slope Stability, Erosion Control, Air Quality Impacts, and Mitigation Measures

109.4.1 Slope Stability

All slopes in and around the Copperton Concentrator are natural, or have been graded to a 3:1 (horizontal to vertical) incline.

109.4.2 Erosion Control

Applicable berms in and around the Copperton Concentrator are maintained and inspected regularly. Where appropriate, hydroseeding or other method for seed application is used on exposed embankments, topsoil stockpiles, and areas where facilities have been demolished to reduce runoff and erosion. Roadways along the ore conveyor have been asphalted to reduce erosion in the area.

109.4.3 Air Quality

The Copperton Concentrator is required to comply with Air Quality Permit DAQE-AN105710035-13, which was approved on June 25, 2013. This permit covers all current operations at the Copperton Concentrator.

109.4.4 Public Health and Safety

KUC will minimize hazards to public safety and welfare during operations. Measures used to protect safety and welfare of employees and the general public include, but are not limited to, the following:

- Removal of all general refuse, scrap metal, and wood
- Following all applicable MSHA regulations for conveyor drop points, pinch points, etc.
- Posting of warning signs
- Restricting and controlling public access using fencing and patrols
- Erecting and maintaining fencing where applicable around the perimeter of the facility.

109.5 Impact Mitigation

Actions to mitigate any of the potential impacts identified in Sections 109.1 through 109.4 are indicated in those sections.

R647-4-110 Reclamation Plan

The final reclamation plan for the Copperton Concentrator and related facilities involves returning land impacted by mining activities to a natural or economically desirable condition. At such time as the surface facilities, including buildings, utilities, equipment, etc. are no longer required for ore processing or related purposes, and if not converted to some other use (see Section 110.1), they will be razed and/or removed. Hazardous conditions caused by mining activities will be eliminated and ground surfaces stabilized and planted using vegetation types that are natural or best suited to the area.

Certain facilities are to remain after final reclamation as indicated in the final reclamation plan (see Section 112). These facilities include structures, tanks and pipelines for water treatment, security facilities such as access gates and fencing, and parking for water treatment facilities. The tailings pipelines will remain in place for use in conveying discharge from the water treatment plant to downstream facilities. The pipeline and conveyor service roads will remain in place to permit pipeline access.

110.1 Current Land Use and Post Mining Land Use

Current land use at the Copperton Concentrator consists of milling ore to produce copper concentrate and molybdenum.

A portion of the Copperton Concentrator facilities and the tailings pipelines will remain after closure for use in post closure water management.

110.2 Reclamation of Roads, Impoundments, Drainages, Facilities, etc.

Following permanent closure of the Copperton Concentrator and associated facilities, usable equipment will be salvaged and sold. The time necessary to complete this process is difficult to forecast due to the variability of the used-equipment market, however it is estimated that two years will be required to salvage and sell usable equipment. Following sale of salvageable equipment, the surface structures will be razed. After razing, foundations will be broken apart, removed, and/or buried. Parking and driving surfaces are to be broken up and buried. The area will then be regraded and compacted areas will be ripped to 12 inches. This stage of the final reclamation is expected to require one year. During the first October following the completion of regrading, the area will be replanted.

110.3 Surface Facilities to Remain: Post-Closure Water Management

The facilities to be converted for use as part of the water treatment plant include one, or more, of the three 400-foot diameter tailings thickeners, associated structures required for tailings thickener operation, the tailings pipeline, the existing flocculant makeup building, lime plant and associated parking lots and roads (Figures 9, 10).

110.4 Treatment of Deleterious Material

Non-recyclable chemicals are to be disposed of according to manufacturer recommendations and in accordance with all federal, state, and local laws and regulations.

To the extent that is economically feasible at closure, ore and/or tailings materials that may be acid generating are to be removed from the concentrator facility and placed in an appropriate location. In the event that ore and/or tailings materials are to remain on site during post closure, means such as capping, vegetating, and/or appropriate containment shall be employed to minimize potential impacts to the surrounding environment.

110.5 Re-vegetation, Topsoil, and Planting

110.5.1 Site Preparation

Site preparation will include removal of all structures and access roads not slated for post-mining use.

110.5.2 Soil Material Replacement

KUC stockpiled growth media for final reclamation of the areas disturbed during concentrator operations and expansions. KUC will place the growth media from these stockpiles onto the areas to be reclaimed following permanent closure of the facilities. A minimum of 6 inches of growth media will be redistributed at final reclamation. This depth will range on average from 6-12 inches depending on terrain. Some of the steeper embankments may receive less than 6 inches of topsoil depending upon slope stability of the placed material.

110.5.3 Seed Bed Preparation

The agronomic procedure for seed bed preparation will include tilling and drill seeding, to be performed in the fall by machine. Depth of tilling will be dependent upon seed size. Broadcasting by hand or hydroseeding will be performed on steeper slopes.

110.5.4 Seed Mixture

The seed mix listed in Table 3 below will be broadcast at a rate of 16.2 pure live seed (PLS) lb/acre.

Table 3: Seed Mix for Revegetation

Species	Planting Rate (pls lb/acre)
Kentucky bluegrass (<i>Poa pratensis</i>)	0.5
Sheep fescue (<i>Festuca ovina</i>)	2.0
Great basin wildrye (<i>Leymus cinereus</i>)	1.0
Slender wheatgrass (<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>)	1.5
Western wheatgrass (<i>Pascopyrum smithii</i>)	2.0
Bluebunch wheatgrass (<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>)	1.5
Wild lupine (<i>Lupinus perennis</i>)	2.5
Mountain lupine (<i>Lupinus argenteus</i> ssp. <i>rubricaulis</i>)	0.5
Western yarrow (<i>Achillea millefolium</i> var. <i>occidentalis</i>)	0.2
Small burnet (<i>Sanguisorba minor</i>)	1.5
Palmer penstemon (<i>Penstemon palmeri</i>)	0.3
Rocky Mountain penstemon (<i>Penstemon strictus</i>)	0.2
Rubber rabbitbrush (<i>Ericameria nauseosa</i>)	0.3
Mountain big sagebrush (<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>)	0.2
Fourwing saltbush (<i>Atriplex canescens</i>)	1.0
Northern sweetvetch (<i>Hedysarum boreale</i>)	1.0
Total	16.2

Table 5: Seed Mix for Growth Media Stockpiles

Species	Planting Rate (PLS lb/acre)
Grasses	
Crested wheatgrass (<i>Agropyron cristatum</i>)	1
Western wheatgrass (<i>Pascopyrum smithii</i>)	1.5
Sandberg's bluegrass (<i>Poa secunda</i>)	0.5
Bluebunch wheatgrass (<i>Pseudoroegneria spicata</i>)	3
Sheep fescue (<i>Festuca ovina</i>)	0.75
Bottlebrush squirreltail (<i>Elymus elymoides</i>)	1
Slender wheatgrass (<i>Elymus trachycaulus</i> ssp. <i>Trachycaulus</i>)	1
Indian ricegrass (<i>Achnatherum hymenoides</i>)	2
Sand dropseed (<i>Sporobolus cryptandrus</i>)	0.3

Forbs/Wildflowers	
Rocky Mtn penstemon(Penstemon strictus)	0.3
Palmer Penstemon (Penstemon palmeri)	0.3
Lewis flax (Linum lewisii)	0.5
Pacific aster (Aster chilensis)	0.03
Shrubs	
no woody species on stockpiles	
Total	12.18

110.5.5 Fertilization

KUC will place the growth media from stockpiles onto areas to be reclaimed following permanent closure of the facilities. Where necessary, soil will be tested for nutrient content and amended as appropriate.

110.5.6 Alternative Reclamation Procedures

At this time, KUC is not seeking alternative reclamation procedures. However, if new, more efficient methods of seeding are found or requested by DOGM, those methods will be evaluated.

110.5.7 Vegetation Cover Levels Sufficient to Establish Revegetation Success Standards

Revegetation shall be considered accomplished when the revegetation has achieved 70 percent of the pre-mining vegetative ground cover. If the pre-mining groundcover is unknown then the vegetative groundcover of an adjacent, undisturbed area will be used as reference to determine percentage of cover.

110.6 Statement

KUC will conduct reclamation as required by R647-4-110.

R647-4-111 Reclamation Practices

KUC will conduct reclamation activities to meet the standards outlined in sections 109 and 110 above.

R647-4-112 Variance

KUC formally requested and was granted a variance on July 1, 1986, to Rule R647-4-14 (formerly M-10[7]) to allow the ore slurry pipelines (now tailings pipelines), the return-water pipeline, the service road paralleling the pipelines, the service road along the ore conveyor corridor, and the plant access road to remain after closure for long-term water management.

R647-4-113 Surety

Surety calculation tables and supporting information are included in Appendix C.

All structures not scheduled for post-mining use will be demolished and equipment will be hauled off-site. Concrete footings, pads, and paved parking areas will be broken up and/or buried, followed by growth material placement and seed mixture. Growth material will be spread at a depth suitable to support revegetation, as specified in Section 110.5.

Areas compacted during mine use will be ripped to a depth of 16 inches followed by placement of growth material and seed mixture. Fencing around the perimeter will be left in place to restrict access to the post-mining water treatment plant.

Appendix A

Figures

GENERAL LOCATION
COPPERTON CONCENTRATOR, KUC

FIGURE 1

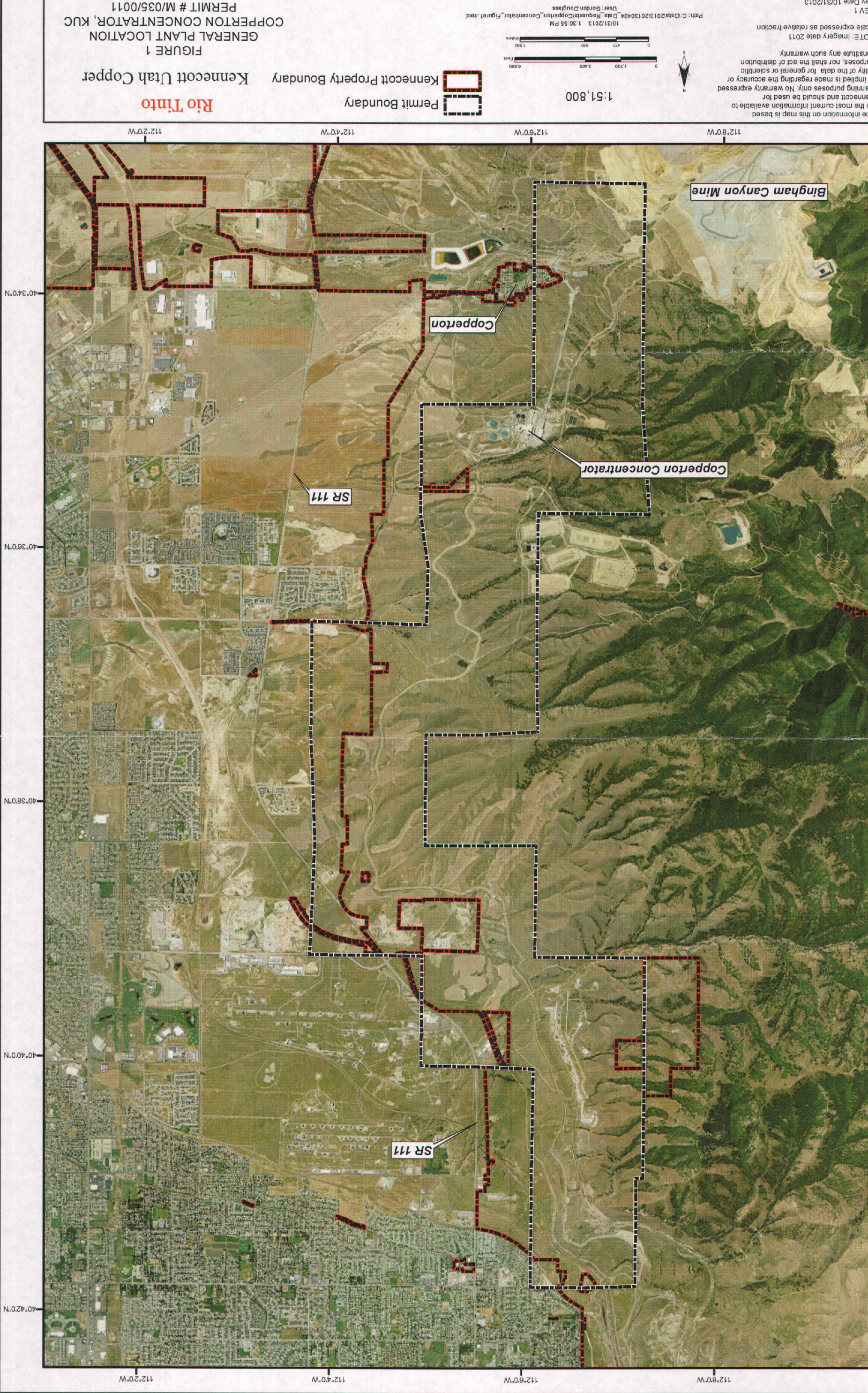
Rio Tinto

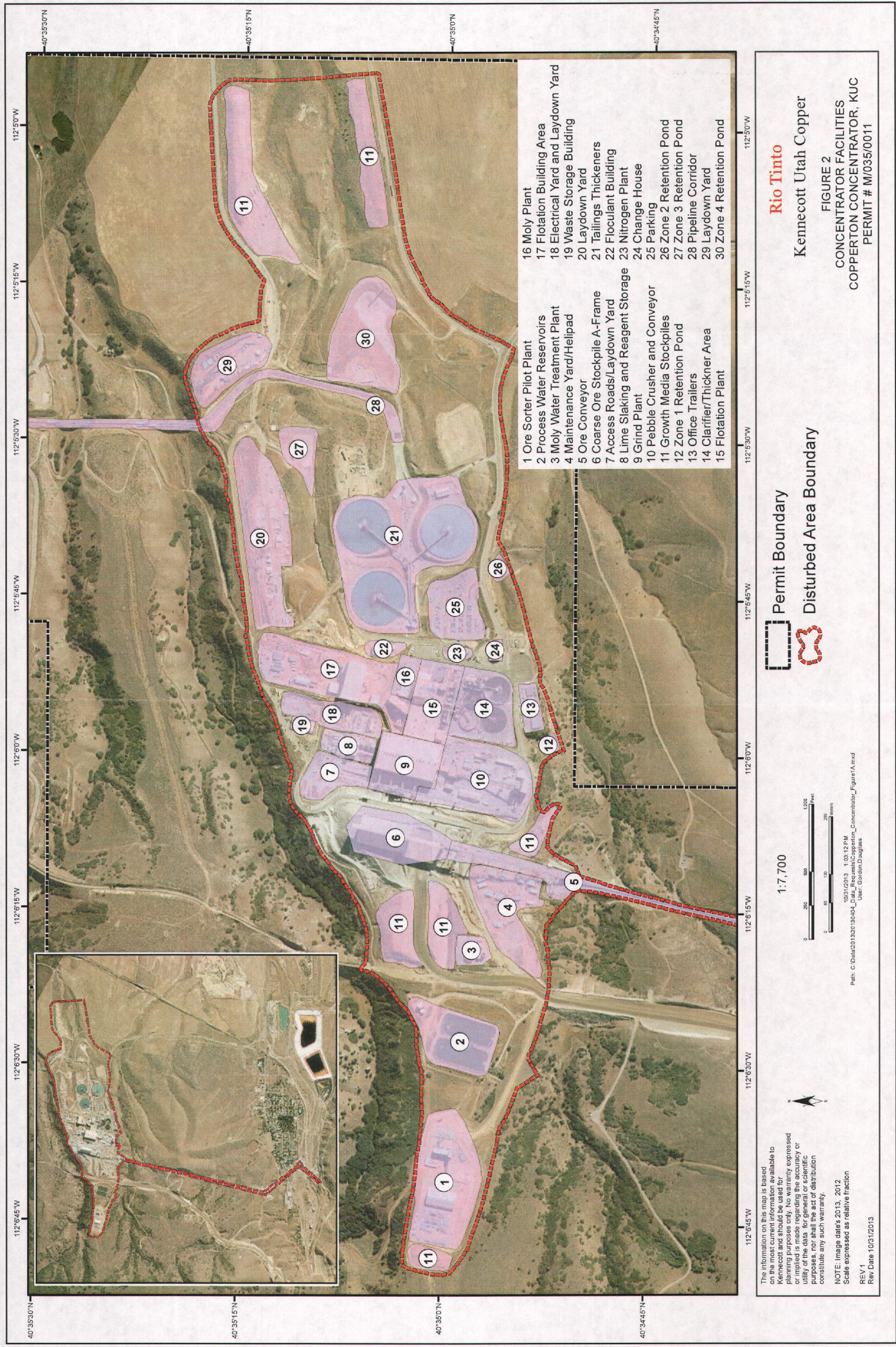
Kennecott Utah Copper

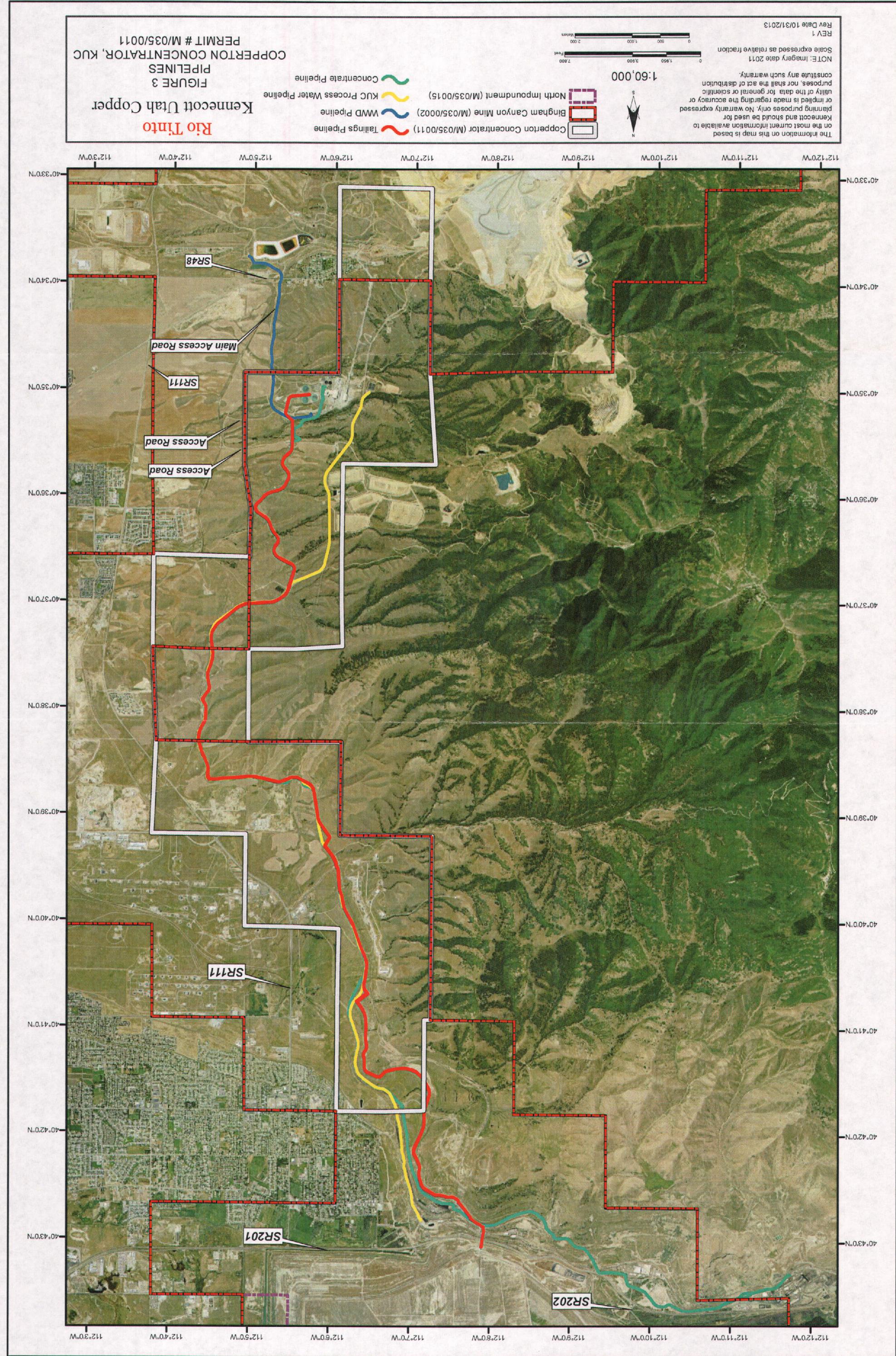
Permit Boundary

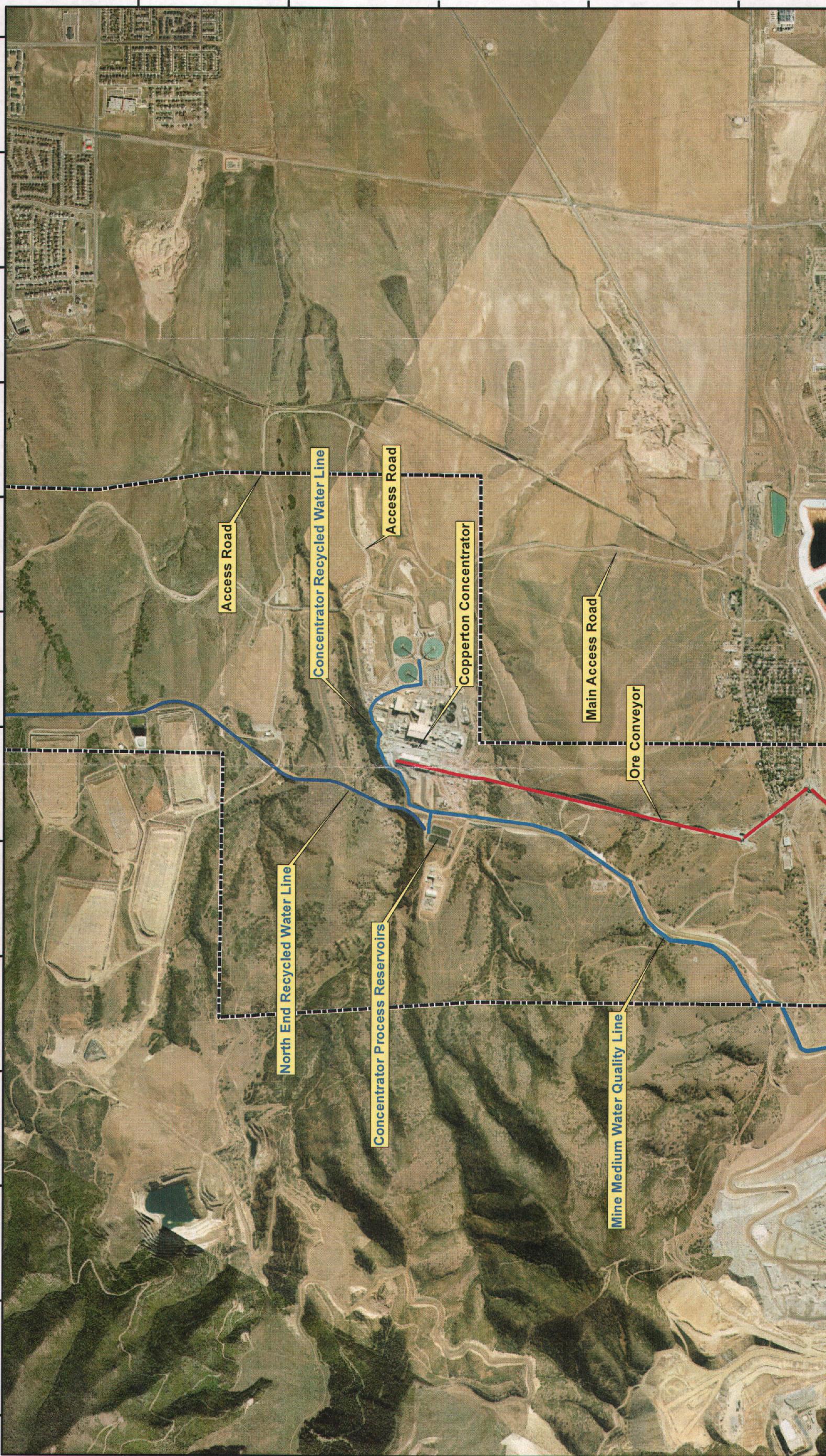
Kennecott Property Boundary

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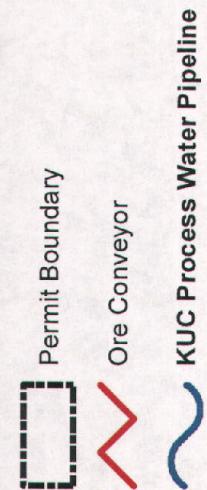






Rio Tinto
Kennecott Utah Copper

FIGURE 4
PROCESS WATER COLLECTION
COPPERTON CONCENTRATOR, KUC
PERMIT # M/035/011



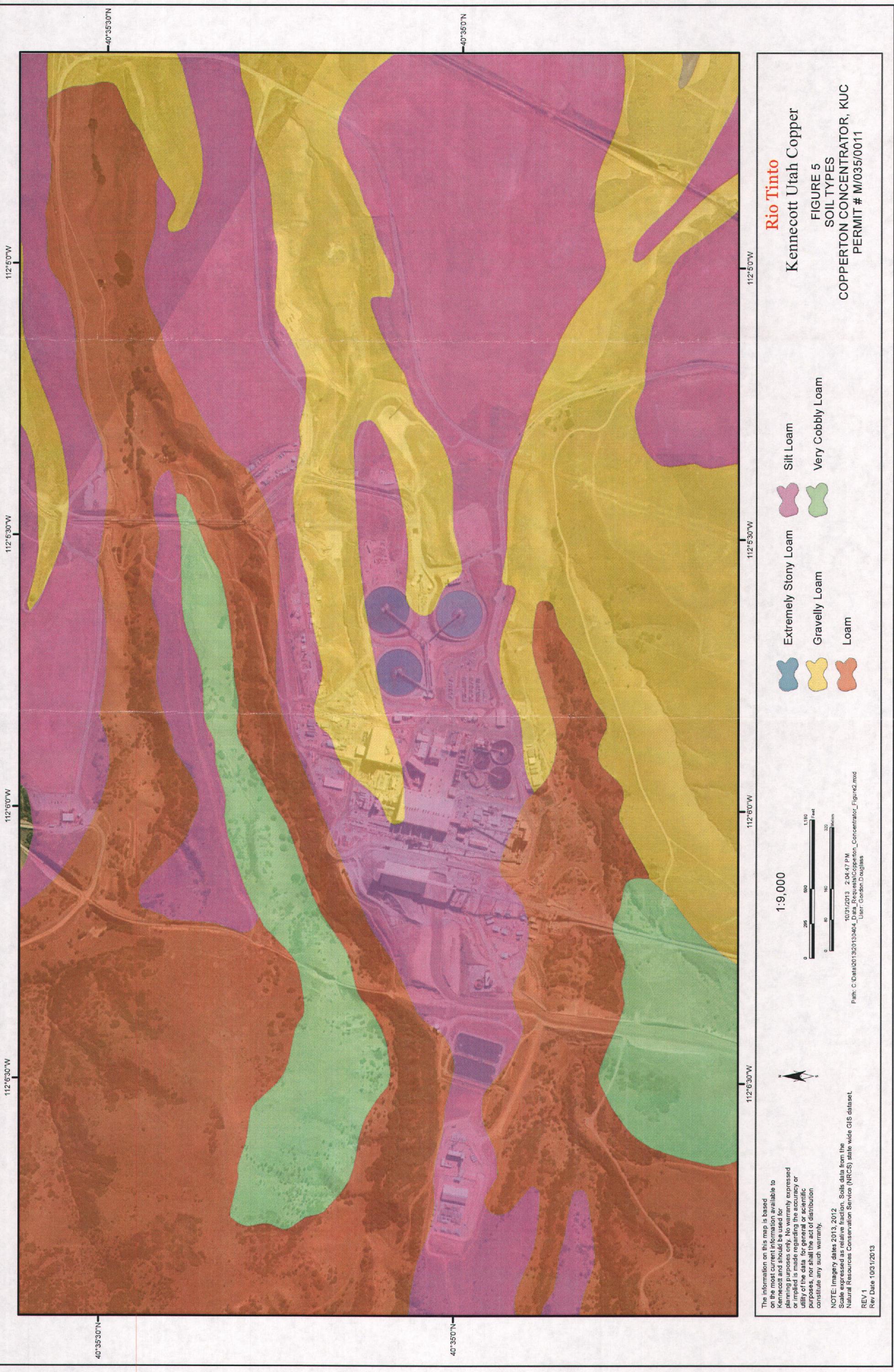
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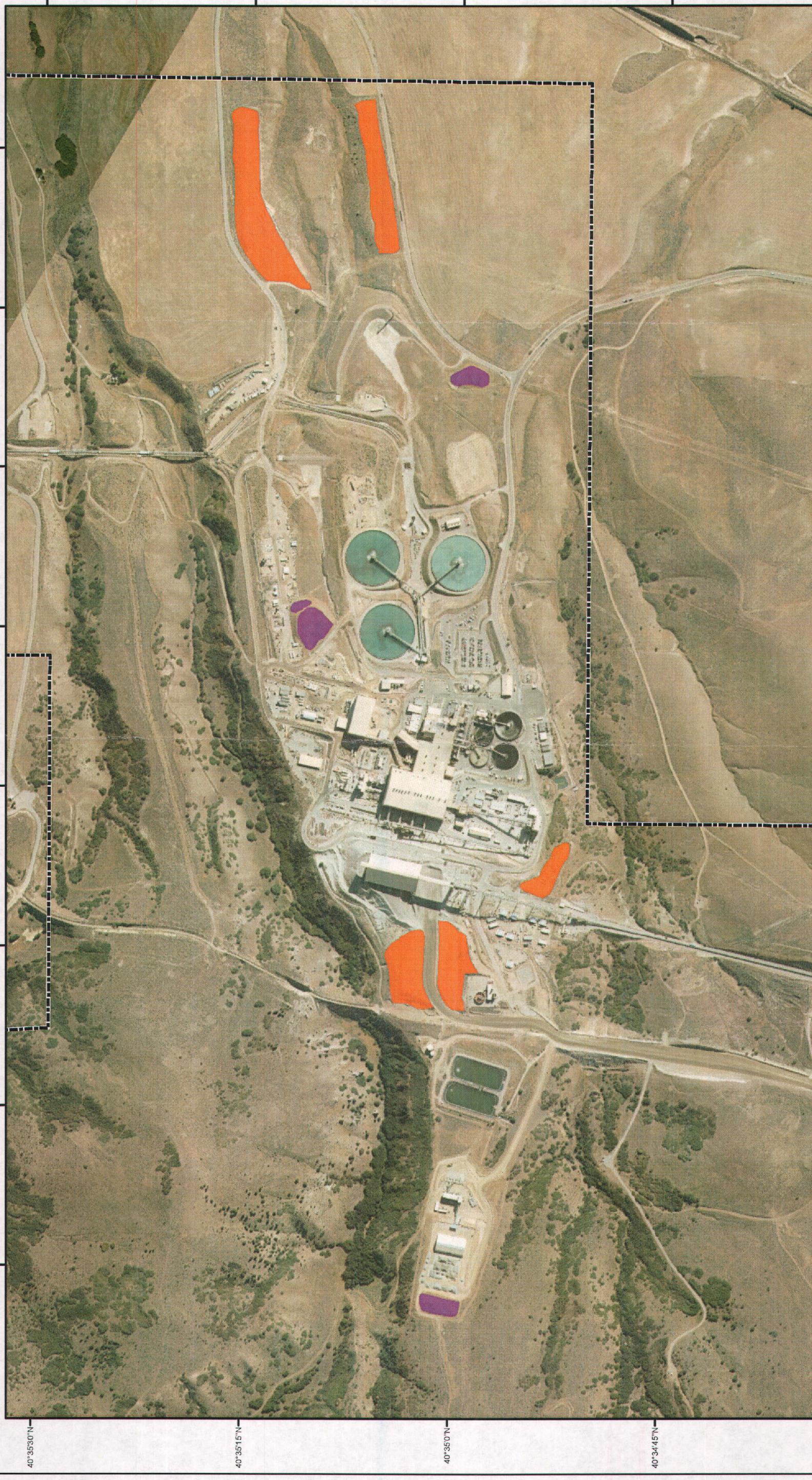


The information on this map is based on the most current information available to Kennecott and should be used for planning purposes only. No warranty expressed or implied is made regarding the accuracy or utility of the data for general or scientific purposes, nor shall the act of distribution constitute any such warranty.

NOTE: Imagery dates 2013 - 2012
Scale expressed as relative fraction
REV 1
Rev Date 10/31/2013

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Rio Tinto
Kennecott Utah Copper

FIGURE 6
SOIL STOCKPILES
COPPERTON CONCENTRATOR, KUC
PERMIT # M/035/0011

- Permit Boundary
- General Fill
- Growth Media

1:8,600



The information on this map is based
on the most current information available to
Kennecott and should be used for
planning purposes only. No warranty expressed
or implied is made regarding the accuracy or
utility of the data for general or scientific
purposes, nor shall the act of distribution
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NOTE: Image date 8/2012
Scale expressed as relative fraction
REV 1
Rev Date 10/31/2013

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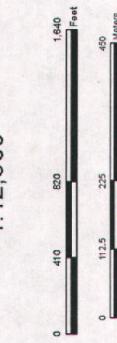


Rio Tinto
Kennecott Utah Copper

FIGURE 7
LOCATIONS OF WELLS
COPPERTON CONCENTRATOR, KUC
PERMIT# M/035/0011

- DOGM_Permits
- ▲ KUC Monitoring Well
- ▲ KUC Potential Culinary Well
- ▲ KUC Culinary Well
- ▼ Copperton City Culinary Well

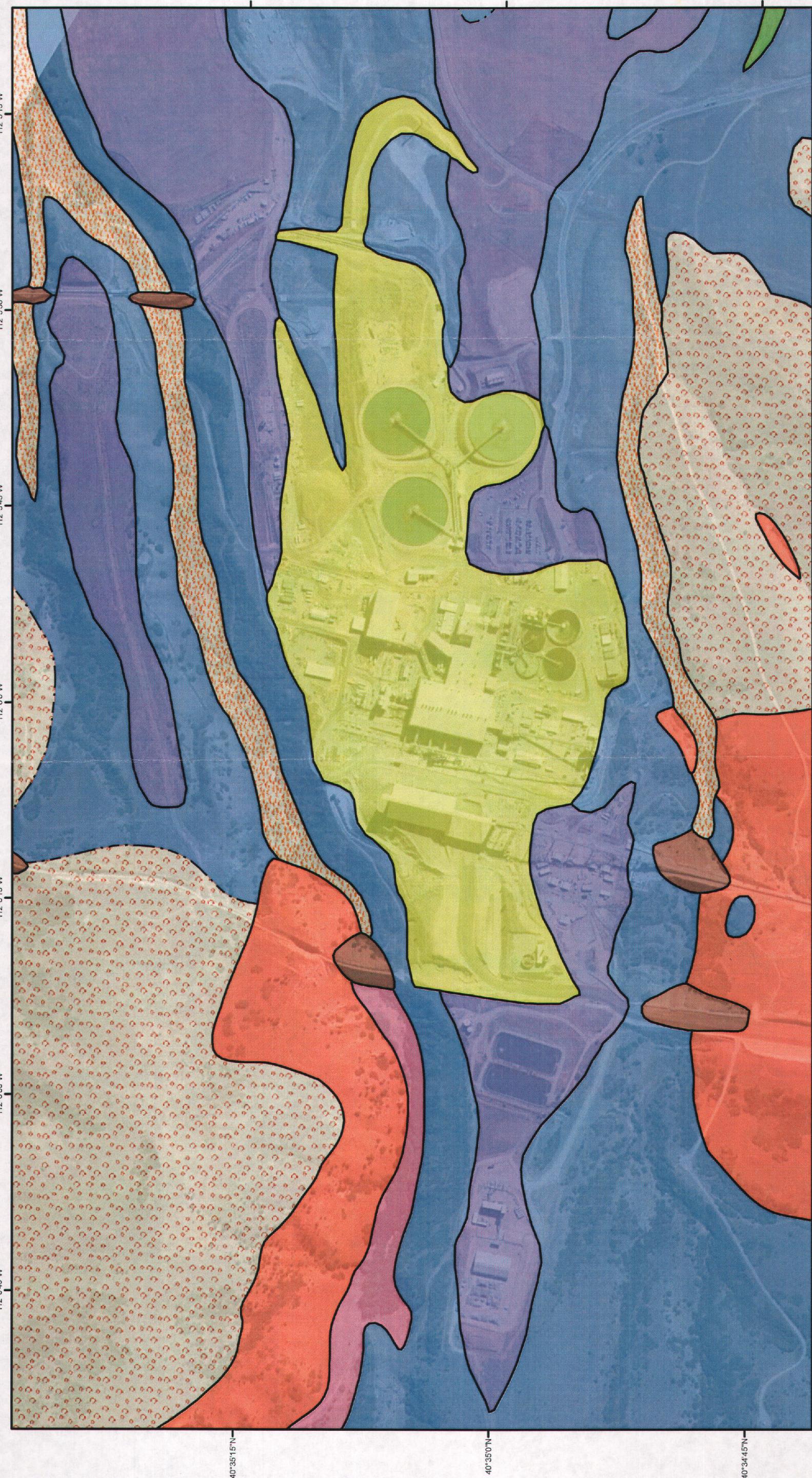
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The information on this map is based on the most current information available to Kennecott and should be used for planning purposes only. No warranty expressed or implied is made regarding the accuracy or utility of the data for general or scientific purposes, nor shall the act of distribution constitute any such warranty.

NOTE: Imagery dates 2013, 2012
Scale expressed as relative traction
REV 1
Rev Date 10/31/2013

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Rio Tinto
Kennecott Utah Copper

FIGURE 8
GEOLOGY

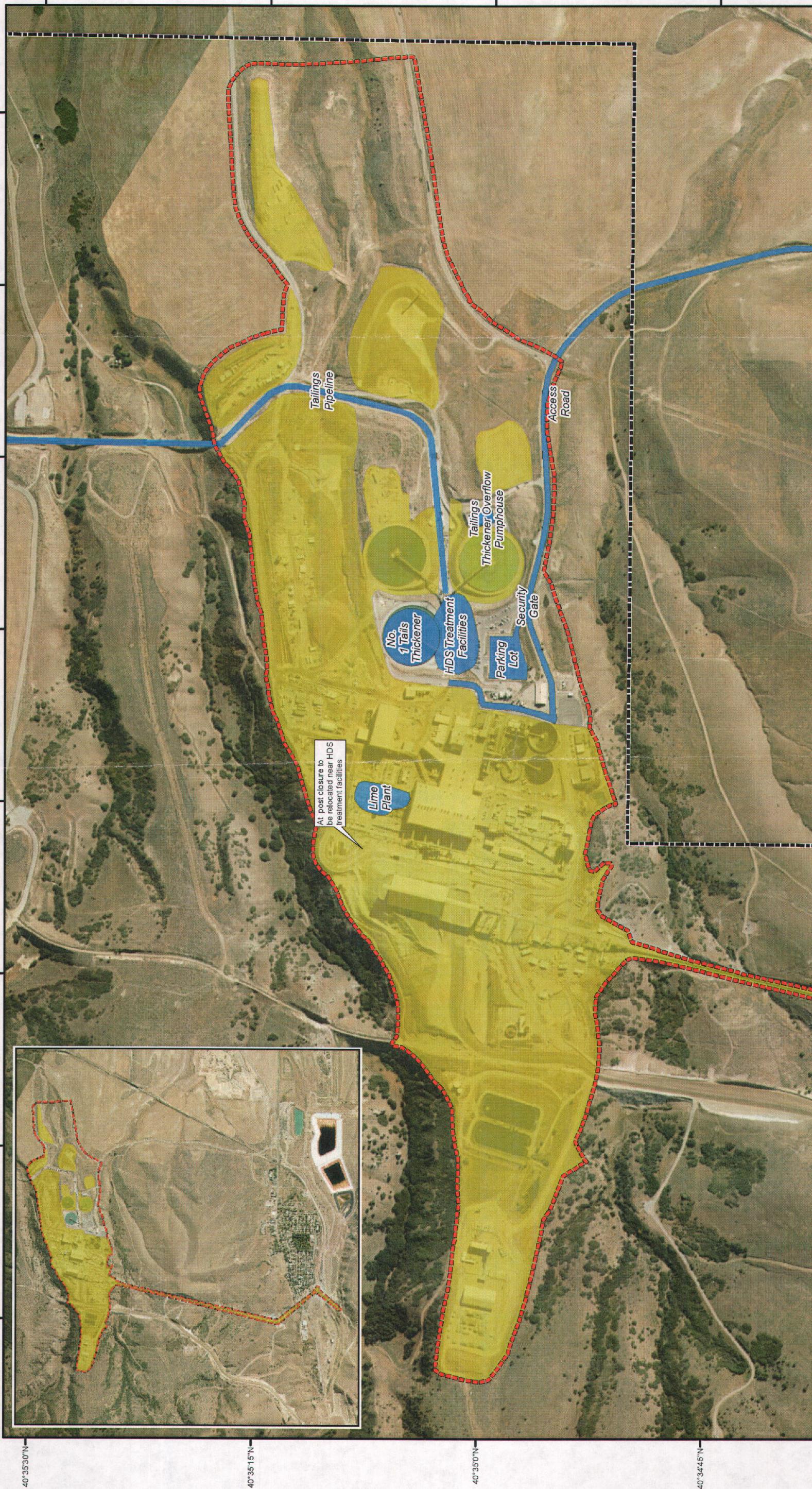
COPPERTON CONCENTRATOR, KUC
PERMIT # M/035/011

- Pediment-mantle alluvium
- Young alluvial deposits
- Younger landslide deposits
- Contact
- Disturbed land
- Older alluvial-fan deposits
- Older volcanic suite - Older block and ash flow tuff
- Older volcanic suite - Older lava flows, undivided
- Oldest alluvial-fan deposits
- Freeman Peak Formation
- Modern alluvial-fan deposits
- Modern stream deposits
- Alluvial and colluvial deposits
- Artificial fill
- Kirkman Limestone and Diamond Creek Sandstone, undivided
- Colluvial deposits

The information on this map is based on the most current information available to Kennecott and should be used for planning purposes only. No warranty expressed or implied is made regarding the accuracy or utility of the data for general or scientific purposes, nor shall the act or distribution constitute any such warranty.

NOTE: Imagery date 2013
Geological Survey (USGS) state wide surface geology GIS data set.
REV 1
Rev Date 10/31/2013

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Rev Date 10/31/2013

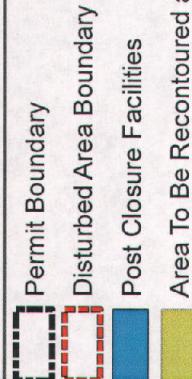


Rio Tinto

Kennecott Utah Copper

FIGURE 9

POST CLOSURE RECLAMATION
COPPERTON CONCENTRATOR, KUC
PERMIT # M/035/011



Post Closure Facilities List
Lime Plant (Existing)
Parking Lot (Existing)
Tailings Pipeline (Existing)
No. 1 Tails Thickener and Associated Facilities (Existing)
Access Road (Existing)
Security Gate (To Be Constructed)
High Density Sludge (HDS) Treatment Facilities (To Be Constructed)

1:8,000
0 70 140 210 280 350 420 490 560 630 700 770 840 910 980 Feet
0 260 520 780 1040 Meters



Appendix B

List of all structures related to the Copperton Concentrator and Second Tailings Pipeline

Area	Structure Description	MOC	Floors	Length	Width	Height	Area	Volume	CY slab		Tons Fe Scrap		Lbs NF Scrap	Lbs Scrap	D Days	
									Lb Debris per Sq Ft.	CY Debris	CY Slab Conc.	Concrete				
Concentrator	Concentrator Change House	S	1	140	75	12	10,500	126,000	50	525,000	750	30%	337	20	80	
Concentrator	Concentrator Storage Tanks (3)	S	1	-	40 Dia	42	1,257	52,779	20	25,133	36	30%	40	60	100	
Concentrator	Copper Concentrate Pump Station	S	1	75	36	20	2,700	54,000	20	54,000	77	30%	87	20	50	
Concentrator	Copper Thickener	S	1	-	2 @ 200 Dia	12	62,832	753,982	20	1,256,637	1795	30%	2017	150	0	
Concentrator	Copper/Molybdenum Concentrator	S	1	-	2 @ 140 Dia	12	30,788	369,451	20	615,752	880	30%	988	100	0	
Concentrator	Thickener Pump House	S	1	76	36	14	2,736	38,304	20	54,720	78	30%	88	30	50	
Concentrator	Underflow Electrical Control Room	S	1	60	20	10	1,200	12,000	20	24,000	34	30%	39	10	40	
Concentrator	Hydrogen Sulfide Tanks (2)	S	1	-	2 @ 38 Dia	30	2,513	75,398	20	50,265	72	30%	81	20	400	
Concentrator	Molybdenum Concentrator	S	2	-	40 Dia	16	1,257	20,106	20	25,133	36	30%	40	20	100	
Concentrator	Copper/Moly Thickener Electrical Room	S	1	30	12	14	360	5,040	20	7,200	10	30%	12	5	200	
Concentrator	Copper/Moly Storage Tanks (3)	S	1	-	3 @ 36 Dia	36	3,054	109,931	20	61,073	87	30%	98	30	0	
Concentrator	Tower Mill	S	3	70	60	72	4,200	302,400	20	84,000	120	50%	156	100	500	
Concentrator	Gland Seal Water Tank	S	1	-	30 Dia	18	707	12,723	20	14,137	20	30%	23	15	100	
Concentrator	Copper/Moly Concentrate Thickener	S	1	-	2 @ 140 Dia	8	30,788	246,301	20	615,752	880	30%	988	100	0	
Concentrator	Clarifier 260-TK-03 (Duplicate of 200)	Conc	1	-	-	-	-	-	-	-	-	-	-	-	-	
Concentrator	Screening Building (Pebble)	S	4	80	55	60	4,400	264,000	20	88,000	126	50%	163	200	500	
Concentrator	Pebble Crusher Building	S	2	110	50	60	5,500	330,000	20	110,000	157	50%	204	200	500	
Concentrator	Delivery/Storage Shed	S	1	130	30	16	3,900	62,400	20	78,000	111	30%	125	10	40	
Concentrator	Pebble Crusher Storage Tank & Conveyor	S	1	80	32	60	2,560	153,600	20	51,200	73	30%	82	200	250	
Concentrator	Pebble Crusher MCC	CMU	1	60	40	16	2,400	38,400	25	60,000	86	30%	77	10	500	
Concentrator	Storage Building	S	1	100	60	18	6,000	108,000	20	120,000	171	30%	193	30	50	
Concentrator	Concentrator Electrical Garage	S	1	60	36	16	2,160	34,560	20	43,200	62	30%	69	10	200	
Concentrator	Garage Shop	S	1	160	50	16	8,000	128,000	20	160,000	229	30%	257	50	150	
Concentrator	Filtered Water Electrical Room	S	1	60	30	26	1,800	46,800	20	36,000	51	30%	58	10	250	
Concentrator	Grinding Building	S, Conc	2	450	280	80	126,000	10,080,000	25	3,150,000	4500	30%	4044	2500	20000	
Concentrator	Flotation Building - Section #1	S, Conc	2	230	100	80	23,000	1,840,000	25	575,000	821	50%	852	1000	4000	
Concentrator	Flotation Building - Section #2	S, Conc	2	380	140	80	53,200	4,256,000	25	1,330,000	1900	50%	1970	1500	4000	
Concentrator	Mechanical Scavenger Bldg/Area - Bldg. 61	S	1	170	60	80	10,200	816,000	20	204,000	291	50%	378	300	1000	
Concentrator	Molybdenum Building & Extension	S	2	180	60	60	10,800	648,000	20	216,000	309	50%	400	1500	3000	
Concentrator	Molybdenum Drum Storage	S	1	100	50	22	5,000	110,000	20	100,000	143	50%	185	50	100	
Concentrator	Moly Concentrator Tanks	S	1	-	1 @ 36 Dia	15	1,018	15,268	20	20,358	29	30%	33	15	150	
Concentrator	Molybdenum Building Extension	S	2	115	35	56	4,025	225,400	20	80,500	115	30%	129	100	150	
Concentrator	Molybdenum Reagents Electrical Room	S	1	45	40	18	1,800	32,400	20	36,000	51	30%	58	10	20	
Concentrator	Reagent Tanks (5)	S	1	-	5 @ 16 Dia	16	1,005	16,085	20	20,106	29	30%	32	30	150	
Concentrator	Reagent Building	S	1	36	16	14	1,005	14,074	20	20,106	29	30%	32	20	100	
Concentrator	Coperton Parts Store	S	1	60	30	20	1,800	36,000	20	36,000	51	30%	58	40	50	
Concentrator	Metallurgical Laboratory	S	1	55	24	12	1,320	15,840	20	26,400	38	30%	42	30	100	
Concentrator	#51 Lime Tank & Electrical Building	CMU	1	60	35	12	2,100	540	20	10,800	15	30%	17	20	250	
Concentrator	#63 MCC Building	CMU	1	24	24	12	576	6,912	25	25,200	75	30%	67	5	250	
Concentrator	#64 4th Line MCC Building	S	1	30	16	14	480	6,720	20	14,400	21	30%	18	0	250	
Concentrator	#67 Column Air Compressor Area Bldg.	S	1	200	175	16	35,000	560,000	20	700,000	1000	30%	129	15	150	
Concentrator	#35 Substation	S	1	140	30	12	4,200	50,400	20	84,000	120	30%	135	50	100	
Concentrator	#18 Lime Plant ('Tanks & Pump House)	S	1	30	26	26	2,121	25,447	20	42,412	61	30%	68	50	200	
Concentrator	Reagent Area	S	1	160	70	14	11,200	156,800	20	224,000	320	30%	360	40	150	
Concentrator	#45 Drum Storage Building	A-Frame & Conveyor	S	1	380	220	80	83,600	6,688,000	20	1,672,000	2389	0%	2064	350	400
Concentrator	#52 Process Water Return Pumps Bldg.	S	1	100	50	14	5,000	70,000	20	100,000	143	30%	160	50	250	
Concentrator	Flocculent Building #17 & 3 Tanks	S	1	30	26	26	780	20,280	20	15,600	22	30%	25	30	150	
Concentrator	#23 Tailings Distribution Building	S	1	140	35	24	4,900	117,600	20	98,000	140	30%	157	100	250	
Concentrator	#20, #21 & #22 Tailings Thickeners	S, CMU	1	-	3 @ 400 Dia	-	376,991	-	25	9,424,778	-	-	-	-	45	
Concentrator	Flotation Building (Cornerstone) Building 1(1)	S, Conc	2	90	52	38	4,680	177,840	20	93,600	134	30%	150	100	4000	
Concentrator	Flotation Building (Cornerstone) Building 1(2)	S, Conc	2	150	25	22	3,750	82,500	20	75,000	107	30%	120	100	4000	
Concentrator	Flotation Building (Cornerstone) Building 2	S, Conc	2	64	57	55	3,648	200								

Appendix C

**Reclamation Spreadsheets and Supporting
Documents**

Copperton Concentrator	Bond Amount	Revised
Bonding Calculations		
Direct Costs		
Subtotal Demolition and Removal	\$29,554,892.00	
Subtotal Backfilling and Grading	\$5,761,141.00	
Subtotal Revegetation	\$38,680.00	
Direct Costs	\$35,354,713.00	
Indirect Costs		
Mob/Demob	\$3,535,471.00	10.0%
Contingency	\$1,767,736.00	5.0%
Engineering Redesign	\$883,868.00	2.5%
Main Office Expense	\$2,404,120.00	6.8%
Project Management Fee	\$883,868.00	2.5%
Subtotal Indirect Costs	\$9,475,063.00	26.8%
Total Cost 2010	\$44,829,776.00	
Number of years		5
Escalation factor		0.015
Escalation	\$3,464,625.00	
Reclamation Cost Escalated	\$48,294,401.00	
Bond Amount (rounded to nearest \$1,000) 2013 Dollars	\$48,294,000.00	
Posted Bond	\$24,727,237.00	
Difference Between Cost Estimate and Bond	-\$23,566,763.00	
Percent Difference		

Item	
Demolition Cost	\$ 22,451.377
Slab & Foundation Cost	\$ 3,550,453
Debris Transport to Disposal Cost	\$ 304,120
Asphalt Removal and Transport Cost	\$ 3,246,942
Grand Total Demolition Cost	\$ 29,554,892

Copperton Concentrator

Revised

Structure Description	Length	Width	Height	tank qty	diameter	area	volume	Lb debris per sq ft	CY Debris	Lbs Debris	Tons Fe Scrap	Lbs NF Scrap	Demo Days	
									CY slab Concrete	Foundation % Slab Conc.				
Concentrator Change House	140	75	12	1	40	10500	1260000	50	525000	750	30%	337	4	
Concentrator Storage Tanks (3)		40 dia	42			1257	52779	20	25133	36	30%	60	100	
Copper Concentrator Pump Station	75	36	20	2	200	2700	54000	20	54000	77	30%	87	5	
Copper Thickener		2 @ 200 dia	12	2		62832	753984	20	126640	1795	30%	150	N/A	
Copper/Molybdenum Concentrator		2 @ 140 dia	12	2		30788	365452	20	615736	880	30%	988	10	
Thickner Pump House	76	36	14		140	2736	38304	20	54720	78	30%	88	N/A	
Underflow Electrical Control Room	60	20	10			1200	12000	20	24000	34	30%	39	1	
Hydrogen Sulfide Tanks (2)		2 @ 38 dia	30	2		2268	68047	20	45355	65	30%	73	400	
Molybdenum Concentrator		40 dia	16	1	40	1257	20106	20	25132.8	36	30%	40	100	
Copper/Moly Thickner Electrical Room	30	12	14			360	5040	20	7200	10	30%	12	200	
Copper/Moly Storage Tanks (3)		3 @ 36 dia	36	3		3054	108931	20	61073	87	30%	98	1	
Tower Mill	70	60	72			4200	302400	20	84000	120	50%	156	500	
Gland Seal Water Tank		30 dia	18	1		707	12723	20	14137	20	30%	23	100	
Copper/Moly Concentrate Thickner		2 @ 140 dia	8	2	140	30788	246301	20	615753.6	880	30%	988	N/A	
Screening Building (Pebble)	80	55	60			4400	284000	20	88000	126	50%	163	25	
Pebble Crusher Building	110	50	60			5500	330000	20	110000	157	50%	204	200	
Delivery/Storage Shed	130	30	16			3900	62400	20	78000	111	30%	125	10	
Pebble Crusher Storage Tank & Conveyor		60	22	60		2560	153600	20	51200	73	30%	82	200	
Pebble Crusher MCC	60	40	16			2400	38400	25	60000	86	30%	77	10	
Storage Building	100	60	18			6000	108000	20	120000	171	30%	193	30	
Concentrator Electrical Garage		36	16			2160	34560	20	43200	62	30%	69	10	
Garage Shop	160	50	16			8000	128000	20	160000	229	30%	257	200	
Filtered Water Electrical Room	60	30	26			1800	46800	20	36000	51	30%	58	150	
Grinding Building	450	280	80			126000	1080000	25	315000	4500	30%	58	10	
Flootation Building - Section #1	230	100	80			23000	1840000	25	5750000	821	50%	852	60	
Floitation Building - Section #2	380	140	80			53200	4256000	25	1330000	1900	50%	1970	4000	
Mechanical Scavenger Bldg/Area - Bldg 61	170	60	80			10200	816000	20	204000	291	50%	378	3000	
Molybdenum Building & Extension	180	60	60			10800	648000	20	216000	309	50%	400	1500	
Molybdenum Drum Storage	100	50	22			5000	110000	20	100000	143	50%	185	3000	
Moly Concentrator Tanks	115	1	@ 36 dia	15	1	36	1018	15268	20	20358	29	30%	33	150
Molybdenum Building Extension		35	56			4025	225400	20	80500	115	30%	129	15	
Molybdenum Reagents Electrical Room	45	40	18			1800	32400	20	36000	51	30%	58	10	
Reagent Tanks (5)		5 @ 16 dia	16	5		1005	16085	20	2106	29	30%	32	20	
Reagent Building	36	16	14			576	8064	20	11520	16	30%	18	100	
Copperton Parts Store	60	30	20			1800	36000	20	36000	51	30%	58	40	
Metallurgical Laboratory		55	24	12		1320	15840	20	26400	38	30%	42	30	
#51 Lime Tank & Electrical Building	30	18	20			540	10800	20	10800	15	30%	17	250	
#63 MCC Building	60	35	12			2100	25200	25	52500	75	30%	67	5	
#64 4th Line MCC Building	24	24	12			576	6912	25	14400	21	30%	18	250	
#62 Column Air Compressor Area Bldg.	30	16	14			480	6720	20	9600	14	30%	15	150	
#35 Substation	200	175	16			35000	560000	20	700000	1000	30%	1123	50	
#18 Lime Plant (Tanks & Pump House)		N/A	N/A			3	30	2121	25447	20	42412	61	30%	
Reagent Area		3 @ 30 dia	12	3							68	50	200	
#45 Drum Storage Building	160	70	14			11200	156800	20	1672000	320	30%	360	150	
A-Frame & Conveyer	380	220	80			83200	6688000	20	2389	0	2883	350	30	
#52 Process Water Return Pumps Bldg.	100	50	14			5000	70000	20	100000	143	30%	160	250	
Flocculent Building #17 & 3 Tanks		30	26	24		780	20280	20	15600	22	30%	25	30	
#23 Tailings Distribution Building	140	35	24			4900	117600	20	98000	140	30%	157	100	
#20, #21, #22 Tailings Thickeners		2 @ 400dia	125	98.65	2	400	251328	0	25	6283200	8976	30%	8067	45
Floitation Building (Comersone) bldg 1(1)	275						34375	3425468.75	20	687500	982	30%	1103	100
Floitation Building (Comersone) bldg 1(2)	150	27	55				4050	89100	20	81000	116	30%	130	4000
Floitation Building (Comersone) bldg 2	64	57	55				3648	200640	20	72960	104	30%	117	1500
Reagent Building #17 & 3 Tanks	36	16	14				576	8064	20	11520	16	30%	18	200
#23 Tailings Distribution Building	60	60	12				3600	43200	20	7200	103	30%	116	250
#20, #21, #22 Tailings Thickeners	76	36	14				2736	38304	20	54720	78	30%	88	7
Floitation Building (Comersone) bldg 1(1)	200	150	80				30000	2400000	20	600000	857	30%	963	250
New Wave Bldg.		115	44				13225	581900	20	264500	378	30%	425	25
New Wave office trailer	60	24	8				1440	11520	20	28800	41	30%	46	250
New Wave office trailer		58	12				696	5568	20	13920	20	30%	46	25

Structure Description	Demolition \$/ Cu Ft	Slab & Fndtn. Demo \$/CY	Debris Xptn Disposal \$/CY	Demolition Cost:	Slab & Fndtn Cost	Debris Xptn to Disposal Cost
Concentrator Change House	0.87	121.42	10.40	84420	40923	7800
Concentrator Sheave Tanks (3)	0.67	121.42	10.40	35382	4898	373
Copper Concentrator Pump Station	0.67	121.42	10.40	36180	10523	802
Copper Thickener	0.67	121.42	10.40	50569	244883	18670.08
Copper/Molybdenum Concentrator	0.67	121.42	10.40	247533	119893	9148
Thickener Pump House	0.67	121.42	10.40	25684	10863	813
Underflow Electrical Control Room	0.67	121.42	10.40	8040	4677	357
Hydrogen Sulfide Tanks (2)	0.67	121.42	10.40	45592	8840	674
Molybdenum Concentrator	0.67	121.42	10.40	13471	4898	373
Copper/Moly Storage Tanks (3)	0.67	121.42	10.40	3377	1403	107
Tower Mill	0.67	121.42	10.40	73654	11901	907
Gland Seal Water Tank	0.67	121.42	10.40	202608	18888	1248
Copper/Moly Concentrate Thickener	0.67	121.42	10.40	8525	2755	210
Screening Building (People)	0.67	121.42	10.40	165022	119893	9148
Pebble Crusher Building	0.67	121.42	10.40	178880	19187	1307
Delivery/Storage Shed	0.67	121.42	10.40	221100	24734	1634
Pebble Crusher Storage Tank & Conveyor	0.67	121.42	10.40	41808	15200	1159
Pebble Crusher MCC	0.50	121.42	10.40	102912	9877	781
Storage Building	0.67	121.42	10.40	18200	9354	891
Concentrator Electrical Garage	0.67	121.42	10.40	72350	23385	1783
Garage Shop	0.67	121.42	10.40	23155	8418	642
Filtered Water electrical Room	0.67	121.42	10.40	85760	3179	2377
Grinding Building	0.67	121.42	10.40	31356	7015	535
Flootation Building - Section #1	0.67	121.42	10.40	6752600	491076	48800
Flootation Building - Section #2	0.67	121.42	10.40	1532800	103432	8543
Mechanical Scavenger Bldg/Area - Bldg 51	0.67	121.42	10.40	205520	239242	19769
Molybdenum Building & Extension	0.67	121.42	10.40	54570	3031	3031
Molybdenum Drum Storage	0.67	121.42	10.40	434160	48568	3209
Moly Concentrator Tanks	0.67	121.42	10.40	73700	22485	1486
Molybdenum Building Extension	0.67	121.42	10.40	10230	3967	302
Molybdenum Raigesins-Electrical Room	0.67	121.42	10.40	15016	15687	1199
Reagent Tanks (5)	0.67	121.42	10.40	7015	535	535
Reagent Building	0.67	121.42	10.40	10777	3918	299
Copperton Parts Store	0.67	121.42	10.40	5403	2245	171
Metalurgical Laboratory	0.67	121.42	10.40	24120	7015	535
#51 Lime Tank & Electrical Building	0.67	121.42	10.40	10613	5145	392
#53 MCC Building	0.50	121.42	10.40	2105	1295	189
#54 4th Line Building	0.50	121.42	10.40	12800	8185	780
#62 Column Air Compressor Area Bldg	0.67	121.42	10.40	3456	2245	214
#45 Substation	0.67	121.42	10.40	4502	1871	143
#16 Lime Plant (Tanks & Pump House)	0.67	121.42	10.40	375200	13610	10400
Reagent Area	0.67	121.42	10.40	9	0	0
#45 Drum Storage Building	0.67	121.42	10.40	17049	8265	630
A-Frame & Converyor	0.67	121.42	10.40	10560	43851	3328
#52 Process Water Return Plums Bldg.	0.67	121.42	10.40	4809560	325625	24841
Flocculent Building #17 & 3 Tanks	0.67	121.42	10.40	46900	19487	1486
#23 Tailing's Distribution Building	0.67	121.42	10.40	13588	3040	232
#20, #21, and #22 Tailing's Thickners	0.50	121.42	10.40	78792	19097	1456
Floation Building (Cornerstone) bldg 1(1)	0.67	121.42	10.40	2386084	979534	93350.4
Floation Building (Cornerstone) bldg 1(2)	0.67	121.42	10.40	0	13374	10214
Reagent Building (Cornerstone)	0.67	121.42	10.40	506697	15785	1203
Pebble Crusher Maint. (Cornerstone)	0.67	121.42	10.40	134429	14218	1084
Thickener Pump House (Cornerstone)	0.67	121.42	10.40	5403	2245	171
New Wave Bldg.	0.67	121.42	10.40	26944	14031	1070
New Wave office trailer	0.67	121.42	10.40	388673	51544	3930
New Wave office trailer	0.67	121.42	10.40	3731	2713	428
						207
					TOTALS	\$ 22,481,377 \$ 3,560,453 \$ 304,120

Copperton Concentrator

Demolition Costs

Revised

Copperton Concentrator Asphalt Removal						
Area	ft length	ft width	sq ft Area	Notes	Remove/Xport \$/sq ft (1)	Remove and Transport Cost
Parking Lot 2	225	160	36000	100% factor for free area	2.39	\$ 86,040
Parking Lot 3	125	150	18750	100% factor for free area	2.39	\$ 44,813
Parking Lot 3	70	85	5950	100% factor for free area	2.39	\$ 14,221
Thickener tank area	580	475	280250	100% factor for free area	2.39	\$ 659,786
Area under Mills, conveyor	710	480	326800	75% factor for free area	2.39	\$ 780,574
Area west of grinding bldg.	480	150	696000	85% factor for free area	2.39	\$ 164,910
Area north of grinding bldg.	400	250	100000	50% factor for free area	2.39	\$ 239,000
Area west of mill extension	150	150	22500	100% factor for free area	2.39	\$ 53,775
Area east of mill extension	270	180	48600	50% factor for free area	2.39	\$ 116,154
Area east of mill complex	300	200	60000	75% factor for free area	2.39	\$ 143,400
Building east of large clarifier	200	110	22000	50% factor for free area	2.39	\$ 52,580
Around tailing thickeners (2)	280	24	63280	2	2.39	\$ 151,239
Main Plant roadways	13930	22	306660	100% factor for free area	2.39	\$ 732,439
				Asphalt Removal Total	\$ 3,248,942	

Note (1)Based on \$1.72/square ft. Bill Costbook, 2013 + \$0.25 per square foot (\$10/cy) to transfer to site disposal + \$0.25 per square foot to inter & cover
 This note is extracted from ERMs report titled "Decommissioning/Demolition Assessment" (Table 3) dated 2013

Copperton Concentrator

Earthwork Costs

Revised

Concentrator earthmoving Costs		acres	Cubic yards	Cost per cubic yard	Total Cost
Scarfing w/ Cat 16 in preparation for revegetation		85.4	256013	22.88	\$ 5,734,025
Unit	Operating Cost	Unit	Equip Cost	Labor Cost	Total Production units
Cost	83.53	84.3 \$/op hr	167.83	71.75 \$/hr	0.7545 ac/hr
					85.4 acres
					\$ 5,761,141
Total Earthwork Costs					
Earthmoving costs includes: excavate transport to disposal excavate borrow material Haul, place, spread and compact borrow fill					
The source of the \$22,000/cu yd is Kennecott's actual operating cost experience. the source of the volume is the ERM report "Decommissioning/Demolition Assessment", Table 4, 2013 The source of the Cat 16 costs is Means 2013 (01 54 33 20 1930)					
PRODUCTIVITY CALCULATION - CAT 16 GRADER SCARIFYING					
Operator factor	Efficiency factor			opr adj factor	
0.75	0.83			0.62	
ave speed(mi/hr)	eff width	ft/mi	acre	sc. ft/ac	ac/hr
1	10	5280	1	43560	1.21
opr adj factor	Production rate(ac/hr)				
0.62	0.7545				
1.21					

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The source of the \$22.88/cu yd is Kenneco's actual operating cost experience.

the source of the volume is the ERM report "Decommissioning/Dem

ANSWER

PRODUCTIVITY CALCULATION - CAT 16 GRADER SCARIFYING					
Operator factor	Efficiency factor			opr adj factor	opr adj factor
0.75	0.83				0.62
gravel speed(m/hr)	eff width	#/mi	acre	scr filrac	scrif
1	10	5250	1	43560	1.21
ac/hr	opr adj factor		Production rate(ac/hr)		
1.21	0.62		0.7545		

	acres	Cost per acre	Total Cost
			Total Revegetation Costs
Cooperiton Concentrator	55.1	702	\$ 38,680
Revegetation costs include:			
Seed Mix			
Hand Application of seed			

The source of the \$702 per acre revegetation is Kennecott's actual operating cost experience. The source of the 55.1 acres to be revegetated is the attached ERM report "Decommissioning/Demolition Assessment" table 4.

Copperton Concentrator

Revegetation Costs

Revised

BC Regrade			
from	to	acres	
6940	6840	71	
6840	6790	70	
6790	6690	50	
6690	7190	62	
7190	7390	45	
top of dump		397	
Total acres		735	
East Top Dump			
from	to	acres	
65.50	66.90	69	
66.90	66.90	146	
66.90	7190	95	
7190	7390	79	
7390	7690	45	
top of dump		16	
Total acres		450	

Appendix D

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